



Emily Oblath, Ph.D.
Department of Justice
Drug Enforcement Administration
Office of Forensic Sciences

Forensic Chemist
Western Laboratory
Pleasanton, CA

AREA OF EXPERTISE

Forensic Discipline

Forensic Chemistry, Controlled Substance Analysis

PROFESSIONAL EXPERIENCE

DRUG ENFORCEMENT ADMINISTRATION

FORENSIC CHEMIST, DEA Western Laboratory (Pleasanton, CA) 2016-Present

- Analyze evidence for the presence or absence of controlled substances
- Report on the results of chemical analysis for controlled substances
- Store and handle evidence to maintain the chain of custody

Training

- DEA Basic Forensic Chemist Training, DEA Academy (Quantico, VA), February 2016 - May 2016
- Fentanyl Trends, Recent Seizures, and Safe Analysis Practices, Western Laboratory (Pleasanton, CA), August 2016
- Low-Thermal Mass (LTM) Theory, Operation, and Troubleshooting, Western Laboratory (Pleasanton, CA), August 2016
- Closed Loop Extraction of Butane Hash Oil, Western Laboratory (Pleasanton, CA), August 2016
- Butane Extraction of Cannabis, Western Laboratory (Pleasanton, CA), August 2016
- DEA Basic Clandestine Laboratory Certification School, DEA Academy (Quantico, VA), November 2016
- Maintenance of Acquity UPLC H Class Systems, Waters Corporation (Pleasanton, CA), June 2017

USDA AGRICULTURAL RESEARCH SERVICE

POSTDOCTORAL RESEARCH ASSOCIATE, National Center for Agricultural Utilization Research (Peoria, IL) 2014-2016

- Analyzed Brassica germplasm to determine quality characteristics including moisture, oil, protein, chlorophyll, and glucosinolate content and fatty acid profile
- Developed a Near-Infrared Spectroscopy (NIRS) calibration for rapid, non-destructive analysis of brassica germplasm
- Operated, maintained, calibrated, and performed troubleshooting of analytical instrumentation including high-performance liquid chromatography (HPLC), gas chromatography (GC), NIRS, pulsed nuclear magnetic resonance (NMR), and ultraviolet/visible (UV/Vis) Spectrophotometry
- Analyzed collected data including mathematical, algebraic, and statistical calculations

PHYSICAL SCIENCE TECHNICIAN, National Center for Agricultural Utilization Research (Peoria, IL) 2013-2014

- Analyzed Brassica germplasm to determine quality characteristics including moisture, oil, protein, chlorophyll, and glucosinolate content and fatty acid profile
- Operated, maintained, calibrated, and performed troubleshooting of analytical instrumentation including HPLC, GC, NIRS, pulsed NMR, and UV/Vis Spectrophotometry
- Analyzed collected data including mathematical, algebraic, and statistical calculations

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

POSTDOCTORAL RESEARCH ASSOCIATE (Chapel Hill, NC) 2012-2013

- Developed microfluidic methods for DNA hybridization and real-time polymerase chain reaction (PCR) for point-of-care diagnostics of infectious diseases
- Interpreted the results and analyzed the data generated during experiments
- Trained new group members in PCR and immunoassay techniques and in the use of analytical instrumentation

GRADUATE RESEARCH ASSISTANT (Chapel Hill, NC) 2008-2012

- Developed microfluidic devices for point-of-care diagnostics on saliva for diseases including asthma and cystic fibrosis
- Adapted and optimized a bead-based sandwich immunoassay for salivary cytokines onto a microfluidic device
- Incorporated DNA extraction from whole saliva and real-time PCR onto a microfluidic device for diagnosis of upper respiratory tract infections

Training

- Biosafety Level 2 (BSL-2) training, (Chapel Hill, NC), 2009
- Focused Ion Beam (FIB) and Scanning Electron Microscope (SEM) training, (Chapel Hill, NC), 2008

ST. MARY'S COLLEGE OF MARYLAND

UNDERGRADUATE RESEARCH ASSISTANT (St. Mary's City, MD) 2006-2007

- Determined daily levels of gas-phase polychlorinated biphenyls (PCBs) at Piney Point Park, MD over more than a month
- Analyzed samples following established procedures so the results could be compared with other locations

EDUCATION AND CERTIFICATIONS

University of North Carolina at Chapel Hill (Chapel Hill, NC)

- Doctoral Degree in Analytical Chemistry (2012)
- Dissertation title: Microfluidic Devices for Performing Multiplexed Immunoassays and Nucleic Acid Tests

St. Mary's College of Maryland (St. Mary's City, MD)

- Bachelor's Degree in Chemistry and Mathematics (2007)

PROFESSIONAL AFFILIATIONS

- American Chemical Society (ACS), member, 2007-Present

PRESENTATIONS AND LECTURES

- Poster presenter, Multiplexed microfluidic immunoassays for the detection of biomarkers in saliva
 - 23rd International Symposium on Microscale Bioseparations, (Boston, MA), 2009
- Presenter, Microfluidic chip-based genomic DNA extraction and real-time PCR for the identification of bacteria in saliva
 - 26th International Symposium on Microscale Bioseparations, (San Diego, CA), 2011
- Poster presenter, A microfluidic chip for combining DNA extraction and real-time PCR for identifying bacteria in saliva
 - 15th International Conference on Miniaturized Systems for Chemistry and Life Sciences, (Seattle, WA), 2011
- Presenter, A microfluidic device to identify bacteria in saliva integrating DNA extraction and real-time PCR
 - 64th Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, (Philadelphia, PA), 2013
- Poster presenter, Development of a NIRS method to measure quality characteristics in Brassica germplasm
 - 27th Annual Meeting of the Association for the Advancement of Industrial Crops, (Lubbock, TX), 2015
- Presenter, Fentanyl: trends, recent seizures, and safe handling practices for first responders
 - HIDTA Officer Safety Training, (Ukiah, CA), 2017

PUBLICATIONS

- Ramsey JM, Henley WH, Oblath EA, inventors. The University of North Carolina at Chapel Hill, applicant. Microfluidic Devices, Solid Supports for Reagents, and Related Methods. US patent application 61/651648 filed May 2012
- Oblath, EA. Microfluidic Devices for Performing Multiplexed Immunoassays and Nucleic Acid Tests [dissertation]. Chapel Hill (NC): Univ. of North Carolina, 2012.
- Oblath EA, Henley WH, Alarie JP, Ramsey JM. A microfluidic chip integrating DNA extraction and real-time PCR for the detection of bacteria in saliva. *Lab on a Chip* 2013;13(7):1325-1332.
- Nie S, Henley WH, Miller SE, Zhang H, Dennis PJ, Oblath EA, et al. An automated integrated platform for rapid and sensitive multiplexed protein profiling using human saliva samples. *Lab on a Chip* 2014;14(6):1087-1098.
- Gesch RW, Isbell TA, Oblath EA, Allen BL, Archer DW, Brown J, et al. Comparison of several Brassica species in the north central U.S. for potential jet fuel feedstock. *Industrial Crops and Products* 2015;75(B):2-7.
- Oblath EA, Isbell TA, Berhow MA, Allen BL, Archer DW, Brown J, et al. Development of near-infrared spectroscopy calibrations to measure quality characteristics in intact Brassicaceae germplasm 2016;89:52-58.

DISTINCTIONS

- Phi Beta Kappa, St. Mary's College of Maryland, (St. Mary's City, MD), 2007
- Summa Cum Laude, St. Mary's College of Maryland, (St. Mary's City, MD), 2007
- ACS Award for most outstanding undergraduate chemistry student at St. Mary's College of Maryland, (Towson, MD), 2007